

History

The gypsy moth (*Lymantria dispar*), so named because of its ability to travel by attaching itself to various objects, is found in Canada mainly in Ontario, Québec and the Maritime provinces. These moths were accidentally introduced into Massachusetts in 1869, by a French naturalist attempting to cross the European gypsy moth with North American silkworms. His intent was to establish a silk industry on this continent. Some of the insects escaped and have since established themselves in Northeastern United States and Eastern Canada.

Description and Biology

The gypsy moth overwinters in egg masses attached to the bark of trees. The egg masses, usually about the size of a one dollar coin, are buff to tan in colour and may contain from 100 to 1,000 eggs. The severity of the infestation can be determined by the size of the egg mass. Egg masses tend to be smaller, about the size of a dime, when populations are on the decline. Larger egg masses are a sign of stable or growing populations.

The eggs hatch into caterpillars (larval stage) when tree buds begin to open. This stage, lasting up to seven weeks, is when the insect feeds. It is, therefore, important to control gypsy moth infestations early in the growing season. The caterpillar is easily recognizable in the latter part of this stage: charcoal grey with a double row of five blue and six red dots on its back. Feeding ends by early July.

The pupal stage occurs after feeding and lasts 9-17 days. Pupal cases can be found in the same places as the egg masses.

Adult moths appear in late July or August. The adult female is approximately 30 mm long, white, with zigzag markings on its wings. The female is incapable of flight and dies about one day after laying its eggs. The male is a brownish colour, much smaller, and survives about one week, mating with several different females.

Habitat

The gypsy moth has been found on approximately 500 species of trees. Broad-leaved trees are preferred, mainly red and white oak, poplar and white birch. The destruction of oaks impacts on forest wildlife, especially deer that depend on the oak's acorns for part of their diet. The acorns provide nutrition needed to survive the harsh winter conditions.

Damage

Gypsy moths are a concern because the larvae feed voraciously on the leaves of both deciduous and coniferous trees. During the larval stage, a gypsy moth caterpillar can eat an average of one square metre of foliage. Leaves play a major role in food production for the tree, converting light into food by photosynthesis. Reducing the number of leaves available to capture sunlight results in a loss in food production. Deciduous trees can sometimes produce a second crop of leaves, but after repeated defoliations trees may die or become so weakened that they are susceptible to secondary infestations. Evergreens may die after only one defoliation.

Asian Gypsy Moth

The discovery of a second species of gypsy moth in Canada has raised new concerns. The Asian gypsy moth, first discovered in the Vancouver area during the spring of 1991, was unknowingly transported into Canada on Soviet ocean-going freighters.

The Asian gypsy moth's lifecycle is similar to that of the European strain; however, some notable differences exist. The Asian gypsy moth prefers coniferous trees, is better adapted to colder climates, and the female is able to fly. These differences make the Asian gypsy moth a serious threat to Canadian forests.

Physical Control

Egg Masses

Gypsy moths can readily spread their populations. They can be carried by wind currents for a distance of up to one kilometre. More commonly, however, they hitch a ride on objects such as vehicles, tents, trailers, lawn chairs, and so on, to infest new areas. Vacationers, especially campers, should be aware of this, and should check their equipment before moving on.

It is important to be thorough when looking for egg masses as they may be difficult to locate. Common hiding places are the underside of branches, tree trunks, fences, firewood, outdoor furniture, swing sets, boats, trailers and under the eaves of buildings. When an egg mass is observed it should be scraped off with a knife and dropped into a bucket filled with hot water and household bleach or ammonia. Larvae and pupae can be handpicked and crushed. Some

persons are sensitive to the long hairs of the larvae. As a precaution, gloves should be worn when handling the insect.

It is important to remove picnic tables, swing sets and lawn furniture from around the bases of trees as these objects provide the insect with protection from the sun's heat.

Caterpillar

Caterpillars can be successfully trapped. To make a trap, wrap a 45 cm wide strip of burlap around the perimeter of the tree at chest height. Tie a string around the centre of the burlap and fold the upper portion down to form a skirt, with the string acting as a belt. The larvae will crawl under the burlap to escape the sun and become trapped. Later in the day, lift the burlap, pick off the larvae and dispose as described above.

Biological Control

B.t. (*Bacillus thuringiensis*) is a selective biological insecticide which controls lepidopterous larvae (caterpillars). B.t. crystals release a toxic protein when dissolved in the alkaline digestive system of the insect. The caterpillar stops feeding soon after, and dies within five days. Other insects, mammals, birds and fish are not affected by B.t.

Chemical Control

Dormant oil, applied to the tree in late winter, will smother the eggs before they hatch.

Traditional insecticides containing carbaryl, pyrethrin, phosmet or permethrin are registered

in Canada to control gypsy moth larvae. These are contact insecticides which are most effectively applied at night, when the caterpillars